

What is claimed is:

1. A method for fabricating a MEMS device having a fixing part fixed to a substrate, a driving part connected to the fixing part by a connecting part, wherein the driving part is floating over the substrate, a driving electrode for driving the driving part by a predetermined driving force, and contact parts selectively switchable with the driving part, comprising:

    patterning the driving electrode on the substrate;

    forming an insulation layer on the substrate on which the driving electrode is formed;

    patterning the insulation layer and etching a fixing region and a contact region of the insulation layer, in which the fixing part and the contact parts, respectively, are to be formed;

    forming a metal layer over the substrate including the fixing and contact regions;

    planarizing the metal layer until the insulation layer is exposed;

    forming a sacrificial layer on the substrate;

    patterning the sacrificial layer to form an opening exposing a portion of the insulation layer and the metal layer in the fixing region;

    forming a MEMS structure layer on the sacrificial layer to partially fill the opening, thereby forming sidewalls therein, wherein the MEMS structure layer forms the fixing part, the driving part and the connection part connecting the fixing part and the driving part on the sacrificial layer; and

selectively removing a portion of the sacrificial layer by etching so that a portion of the sacrificial layer remains in the fixing region.

2. The method as claimed in claim 1, wherein the insulation layer is formed as a thick film having a thickness at least as thick as the thickness of the driving electrode so that the driving electrode is embedded in the insulation layer.

3. The method as claimed in claim 1, wherein, in the step for forming the opening, the opening is substantially formed over the entire portion remaining except for the portion matched with a connection part connecting the fixing part and the driving part.

4. The method as claimed in claim 1, wherein a width of the connection part is narrower than that of the fixing part.

5. The method as claimed in claim 1, before the selective removal of the sacrificial layer, further comprises:

forming etching access holes in the MEMS structure layer.

6. The method as claimed in claim 5, wherein the etching access holes are formed in the driving part of the MEMS structure layer.

7. The method as claimed in claim 1, wherein the insulation layer is a TetraEthyl OrthoSilicate (TEOS) oxide film.

8. The method as claimed in claim 1, wherein the metal layer is gold.

9. The method as claimed in claim 1, wherein the planarization is performed by polishing.

10. The method as claimed in claim 1, wherein the sacrificial layer is a material selected from the group consisting of aluminum, copper, oxide, and nickel.

11. A method for fabricating a MEMS device having a fixing part fixed to a substrate, a driving part connected to the fixing part by a connecting part, wherein the driving part is floating over the substrate, a driving electrode for driving the driving part by a predetermined driving force, and contact parts selectively switchable with the driving part, comprising:

patterning the driving electrode on the substrate;

forming a first insulation layer on the substrate on which the driving electrode is formed;

patterning the insulation layer and etching a fixing region and a contact region of the insulation layer, in which the fixing part and the contact parts, respectively, are formed;

forming a metal layer over the substrate including the fixing and contact regions;

planarizing the metal layer until the driving electrode is exposed;

forming a second insulation film covering the driving electrode to electrically isolate the driving electrode and the driving part;

forming a sacrificial layer on the substrate;

patterning the sacrificial layer to form an opening exposing a portion of the first insulation and the metal layer in the fixing region;

forming a MEMS structure layer on the sacrificial layer to partially fill the opening, thereby forming sidewalls therein, wherein the MEMS structure

layer forms the fixing part, the driving part, and the connection part connecting the fixing part and the driving part on the sacrificial layer; and

selectively removing a portion of the sacrificial layer by etching so that a portion of the sacrificial layer remains in the fixing region.

12. The method as claimed in claim 11, wherein, in the step for forming the opening, the opening is substantially formed over the entire portion remaining except for the portion matched with a connection part connecting the fixing part and the driving part.

13. The method as claimed in claim 11, wherein a width of the connection part is narrower than that of the fixing part.

14. The method as claimed in claim 11, before the selective removal of the sacrificial layer, further comprises:

forming etching access holes in the MEMS structure layer.

15. The method as claimed in claim 14, wherein the etching access holes are formed in the driving part of the MEMS structure layer.

16. The method as claimed in claim 11, wherein the first insulation layer is a TetraEthyl OrthoSilicate (TEOS) oxide film.

17. The method as claimed in claim 11, wherein the metal layer is gold.

18. The method as claimed in claim 11, wherein the planarization is performed by polishing.

19. The method as claimed in claim 11, wherein the sacrificial layer is formed of a material selected from the group consisting of aluminum, copper, oxide, and nickel.

20. A MEMS device, comprising:  
a fixing part fixed to a substrate;  
a driving part connected to the fixing part by a connecting part and floating over the substrate;  
an electrode part for driving the driving part; and  
contact parts selectively switchable with the driving part, wherein the electrode part and the contact parts are planarized on the substrate.

21. The MEMS device as claimed in claim 20, wherein the electrode part includes an electrode and an insulation layer covering the electrode to electrically isolate the driving part and the electrode, the electrode being embedded in the insulation layer.

22. The MEMS device as claimed in claim 20, further comprising:  
an anchor inserted between the fixing part and the substrate for  
fixing the fixing part on the substrate; and  
sidewalls on at least a portion of side surfaces of the anchor.

23. The MEMS device as claimed in claim 20, wherein the  
sidewalls are substantially formed over the entire portion remaining except  
for a portion corresponding to a connection part connecting the fixing part  
and the driving part.

24. The MEMS device as claimed in claim 20, wherein a width of  
the connection part is narrower than that of the fixing part.

25. The MEMS device as claimed in claim 22, wherein the  
sidewalls, fixing part, and driving part are integrally formed in one body.

26. The MEMS device as claimed in claim 25, wherein the  
sidewalls are in contact with the substrate.